

1. An optical display apparatus, comprising a hologram device and a light source, wherein the hologram is a reflection-type hologram formed by:

light having information of an object which is obtained by using light having passed through a slit; and reference light having an incident optical path different from that of the light having the information of the object, and wherein

a reconstructed image of the object is displayed by light from the light source.

2. An optical display apparatus according to claim 1,
15 wherein the light having the information of the object is
object light which is obtained by irradiating the object
with diffused light having passed through the slit.

20 3. An optical display apparatus according to claim 2,
wherein the diffused light is formed by passing light through
a ground glass.

4. An optical display apparatus according to claim 1,
wherein the light having the information of the object is
25 reconstructed light obtained by reconstructing a
transmission-type hologram which is formed by: object light
obtained by irradiating the object with diffused light
having passed through the slit; and irradiation light having
an incident optical path different from that of the object
30 light.

5. An optical display apparatus according to claim 4, wherein the diffused light is formed by passing light through

1
a ground glass.

5 6. An optical display apparatus according to claim 1,
wherein the light having the information of the object is
reconstructed light of a transmission-type hologram which
is obtained by passing through the slit which is arranged
to be adjacent to the transmission-type hologram on which
an image of the object is recorded.

10 7. An optical display apparatus according to claim 1,
wherein the light having the information of the object is
reconstructed light of a transmission-type hologram which
is obtained by passing through: the slit which is arranged
to be adjacent to the transmission-type hologram on which
15 an image of the object is recorded; and a cylindrical lens
having its generatrix along a longitudinal direction of the
slit.

20 8. An optical display apparatus according to claim 1,
wherein the reference light is provided by superposing a
plurality of beams on one another in a direction orthogonal
to a longitudinal direction of the slit.

25 9. An optical display apparatus according to claim 1,
wherein the light source is a linear light source.

30 10. An optical display apparatus according to claim 9,
wherein the linear light source is arranged on or in a
vicinity of a plane orthogonal to a longitudinal direction
of the slit.

11. An optical display apparatus according to claim 1,
wherein an incident plane of the reference light is a plane

004040 "B25T8860

orthogonal to a longitudinal direction of the slit.

12. An optical display apparatus according to claim 1,
wherein an incident plane of the reference light is a plane
5 different from a plane orthogonal to a longitudinal
direction of the slit.

13. An optical display apparatus, comprising a hologram
device and a light source, wherein the hologram is a
10 reflection-type hologram formed by:

light having information of an object which is
obtained by using diffused light diffusing in one direction;
and

- reference light having an incident optical path
15 different from that of the light having the information of
the object, and wherein

a reconstructed image of the object is displayed by
light from the light source.

14. An optical display apparatus according to claim 13,
wherein the light having the information of the object is
20 object light which is obtained by irradiating the object
with the diffused light.

15. An optical display apparatus according to claim 13,
wherein the light having the information of the object is
reconstructed light obtained by reconstructing a
transmission-type hologram which is formed by: object light
25 obtained by irradiating the object with the diffused light;
30 and irradiation light having an incident optical path
different from that of the object light.

16. An optical display apparatus according to claim 15, wherein the reference light is provided by superposing a plurality of beams on one another in a direction orthogonal to the direction in which the diffused light diffuses.

5

17. An optical display apparatus according to claim 13, wherein the light having the information of the object is reconstructed light of a transmission-type hologram which is obtained by passing through the slit which is arranged to be adjacent to the transmission-type hologram on which an image of the object is recorded.

10

18. An optical display apparatus according to claim 17, wherein the reference light is provided by superposing a plurality of beams on one another in a direction orthogonal to the direction in which the diffused light diffuses.

15

19. An optical display apparatus according to claim 13, wherein the diffused light is formed by passing light through a lenticular lens.

20

20. An optical display apparatus according to claim 13, wherein the light source is a linear light source.

25

21. An optical display apparatus according to claim 20, wherein the linear light source is arranged on or in a vicinity of a plane orthogonal to the direction in which the diffused light diffuses.

30

22. An optical display apparatus according to claim 13, wherein an incident plane of the reference light is a plane orthogonal to the direction in which the diffused light diffuses.

004070" 82578220

Sub
B1

23. An optical display apparatus according to claim 13, wherein an incident plane of the reference light is a plane different from a plane orthogonal to the direction in which the diffused light diffuses.

5

24. An optical display system having a plurality of display units arranged on an arrangement plane in which reconstructed images from the plurality of units are synthesized and displayed, wherein

10

each of the plurality of units is an optical display apparatus according to claim 1.

15

25. An optical display system having a plurality of display units arranged on an arrangement plane in which reconstructed images from the plurality of units are synthesized and displayed, wherein

each of the plurality of units is an optical display apparatus according to claim 13.

20

26. An optical display apparatus according to claim 1, wherein the hologram device is provided by combining a plurality of hologram elements with one another.

25

27. An optical display apparatus according to claim 13, wherein the hologram device is provided by combining a plurality of hologram elements with one another.

30

28. An optical display apparatus according to claim 1, wherein the hologram device is formed on a flexible substrate.

29. An optical display apparatus according to claim 13, wherein the hologram device is formed on a flexible sub-

004070" 82578260

strate.

30. An optical display apparatus according to claim 1,
wherein the hologram device is portable.

5

31. An optical display apparatus according to claim 13,
wherein the hologram device is portable.

10

32. An optical display apparatus according to claim 1,
wherein: the light source is a linear light source; and a
length and an installation direction of the linear light
source are set so that a predetermined reconstructed image
viewing range is obtained.

15

33. An optical display apparatus according to claim 13,
wherein: the light source is a linear light source; and a
length and an installation direction of the linear light
source are set so that a predetermined reconstructed image
viewing range is obtained.

20

34. An optical display apparatus according to claim 1,
wherein: the light source is a linear light source; and a
position where a reconstructed image is formed is shifted
by moving the linear light source out of an incident plane.

25

35. An optical display apparatus according to claim 13,
wherein: the light source is a linear light source; and a
position where a reconstructed image is formed is shifted
by moving the linear light source out of an incident plane.

30

36. An optical display apparatus according to claim 1,
comprising a plurality of the hologram devices, wherein the
plurality of hologram devices are reconstructed by one light

00331528.010400

44. An optical display apparatus according to claim 1, wherein the light source is a linear light source configured by a light beam which is linearly focused by a mirror or a lens.

5

45. An optical display apparatus according to claim 13, wherein the light source is a linear light source configured by a light beam which is linearly focused by a mirror or a lens.

10

46. An optical display apparatus according to claim 1, wherein the light source is a linear light source comprising an array of point light sources.

15

47. An optical display apparatus according to claim 13, wherein the light source is a linear light source comprising an array of point light sources.

20

48. An optical display apparatus according to claim 1, wherein the light source is a linear light source configured by a bright line displayed on a two-dimensional display apparatus.

25

49. An optical display apparatus according to claim 13, wherein the light source is a linear light source configured by a bright line displayed on a two-dimensional display apparatus.

30

50. An optical display system, comprising an optical display apparatus and an information communication apparatus, wherein the optical display apparatus is an optical display apparatus according to claim 1.

0040400 00381528 002518560

51. An optical display system according to claim 50, wherein the optical display apparatus three-dimensionally displays a communication area of the information communication apparatus.

5

52. An optical display system according to claim 51, wherein a display area of the optical display apparatus and the communication area of the information communication apparatus match with each other.

10

53. An optical display system according to claim 50, wherein the information communication apparatus performs a one-way communication or an interactive communication of information.

15

54. An optical display system, comprising an optical display apparatus and an information communication apparatus, wherein the optical display apparatus is an optical display apparatus according to claim 13.

20

55. An optical display system according to claim 54, wherein the optical display apparatus three-dimensionally displays a communication area of the information communication apparatus.

25

56. An optical display system according to claim 55, wherein a display area of the optical display apparatus and the communication area of the information communication apparatus match with each other.

30

57. An optical display system according to claim 54, wherein the information communication apparatus performs a one-way communication or an interactive communication of

004010" 82518560

information.

58. An optical display apparatus, comprising an image display apparatus, an imaging optical system and a hologram screen, wherein:

the hologram screen is arranged to reflect light from a point light source so as to form a point image at a position different from the point light source; and

the imaging optical system is arranged to adjust a focus in a vertical direction of an image displayed on the image display apparatus to coincide with the hologram screen.

59. An optical display apparatus according to claim 58, wherein the formed point image is a real image.

60. An optical display apparatus according to claim 58, wherein the formed point image is a false image formed at a position on an opposite side of the point light source with respect to the hologram screen.

61. An optical display apparatus according to claim 58, wherein:

the imaging optical system has independent imaging functions in a vertical direction and in a lateral direction;

for the vertical direction, a focus in the vertical direction of an image displayed on the image display apparatus is adjusted to coincide with the hologram screen; and

for the lateral direction, a focal distance is arranged to be variable.

004070" 325752560

62. An optical display apparatus according to claim 58, further comprising polarization glasses whose polarization transmission directions for respective eyes are orthogonal to each other.

5

63. An optical display system having a plurality of display units arranged in a lateral direction, wherein each of the plurality of display units is an optical display apparatus according to claim 58.

10

64. An optical display system having a plurality of display units arranged in a depth direction, wherein each of the plurality of display units is an optical display apparatus according to claim 58.

15

65. An optical display system according to claim 58, wherein the image display apparatus includes: a display device selected from an LED, a CRT, a polymer dispersed type liquid crystal panel and an organic EL panel; and a polarization switching device.

20

66. An optical display system according to claim 65, wherein the polarization switching device includes a ferroelectric liquid crystal panel.

004010" 8251528 010400